An Empirical Analysis of Export Concentration and Export Earnings Instability: The Case of Nepal

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Abstract

This study examined the pattern of exports earnings instability and whether export concentration generated fluctuations in export earnings in Nepal during the period of 1974-2007. The analysis revealed that Nepal's exports were concentrated in both commodity and geography. Also, Nepal's exports were more highly concentrated in terms of geography, than in commodities. The empirical results of the Ordinary Least Squares (OLS) illustrated that the relationship between export concentration and fluctuations in export earnings were positively related and highly significant.This illustrates that there was export concentration generated fluctuations in export earnings in Nepal during the period of 1974-2007.

Background

The role of exports in economic growth is indispensable. Theoretically, an increase in exports allows an increase in imported capital goods, which raises the growth rate of capital formation, and thus, stimulates growth (Islam, 1998). For example, the East Asian countries[1] called newly industrialized countries, or Asian tigers, have proven that exports are necessary for the export-led economic growth and the overall development of the newly industrialized countries. Therefore, economies should prioritize increasing the volume of exports substantially, rather than imports.

Two crucial questions for the trade and economic growth pundits is how can developing and least developing countries increase their exports and how can they maintain sustainable export earnings. Trade economists have been arguing that countries strong in technology advancement and capital goods should adopt a specialization policy for their exports in terms of products. They believe this, because; specialization would be better for the country that can benefit from comparative advantage.

On the other hand, it has been argued that export diversification in terms of markets and products would be fruitful for the developing countries, rather than export concentration. This is true because developing countries are less efficient, more labor

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[1] South Korea, Malaysia, Singapore, and Thailand

intensive, highly concentrated in primary products and produce a few manufacturing products. The Hesse finding also confirms that the effect of export concentration is potentially nonlinear, with poorer countries benefiting from diversifying their exports, in contrast to richer countries that perform better with export specialization (Hesse, 2008).

Most of the least developing countries (LDCs) exports and development planning rely on imports of raw materials and capital goods. They export a few commodities to a limited international market. If a country exports a narrow range of exportable products to a few markets, any type of shocks on the demand and supply sides yield instability in export earnings. Hence, export earnings instability could discourage the necessary investments in the economy by risk-averse firms, increase macroeconomic uncertainty, and be detrimental to longer-term economic growth (Hesse, 2008).

According to Lederman and Maloney (2007) and Hesse (2008), export concentration is detrimental to gross domestic product (GDP) per capita growth. This illustrates that, in the long run, repercussions of export concentration transmit into the domestic economy by creating fluctuations in export earnings. Thus, export concentration generates export earnings instability and fluctuations in export earnings adversely affect macro and micro variables. In this case, it also retards economic growth.

Nepal is one of the least developed countries and, like other LDCs; its export size is very small. Its exportable products are limited and mainly Nepal imports of raw materials and capital goods. According to Pant and Panta (2009),

> *"Even though Nepal is one of South Asia's most open and trade dependent economies, it has not been able to fully exploit the potential for export growth since its exports are focused in a few products (such as readymade garments, carpets and Pashmina to overseas countries) and markets (with India's share in Nepal's total export being about 64 percent in 2007/08). Though trade is considered to be an engine of growth for economic development, market and product concentrations of exports have led to volatile export growth in Nepal (2009, pp.53)."*

Nepal has been producing and exporting a handful of commodities to the western countries such as Germany, United Kingdom, France, North America and her neighboring countries India and China. The share of Nepalese exports to India was 84 percent of the total exports in 1974. After that, it decreased with some fluctuations prior to 1992. However, after reviewing a bilateral trade and transit treaty between Nepal and India in 1994, it helped raise exports to India. In 2005, India's share was 68 percent, the United States of America's (USA) share was 2 percent, and Germany's share was 5 percent, whereas the share of each market was 10 percent, 23 percent and 44 percent respectively in 1991.

In particular, readymade garments, handicrafts, woolen carpets, and silver ornaments are the major products exported by Nepal. Nepal used to export timber and rice husked during the 1970s. During the 1980s, exports of these products were almost zero.

However, the exports of readymade garments and carpets began in the first half of the 1980s. The volume of exports increased rapidly during the period of 1985 to 1995, while the volume of readymade garments and carpets has fallen persistently since 1999. The contribution of readymade garments and carpets were both 8 percent to total exports in 2007, whereas the share of these products was 56 percent and 31 percent in 1993 and 29 percent and 44 percent in 1994.

The export sector's contribution to the Gross Domestic Product (GDP) has not increased significantly because of the lower productivity of export industries, low competitiveness of Nepalese exports in the international markets, and the lack of effective export promotion policy. On the other hand, periodic export growth fluctuated highly. The growth rate was 80 percent in 1992, whereas it was negative in 2000. As a result Nepal primarily relies on a few exportable commodities to a few markets. This may create fluctuations in export earnings.

The objective of this study is to empirically analyze the relationship between export concentration and export earnings instability in Nepal. Export concentration, in terms of products and countries, may lead to export earnings instability. I expect that the findings of this study will be consistent with this argument. I also expect that an effective exports diversification strategy will be a policy recommendation for sustainable exports growth.

Literature Review

The debate about export concentration and instability in export earnings has not stopped among the trade economists and the development planners since the concern about export concentration and export earnings instability came into existence. The worrisome aspect among them in the past, even if it is remaining today, was that the LDCs are suffering more from just exporting a few goods, as then their earnings are more highly volatile than in developed countries. Athukorala and Huynh (1987) argued that the LDC experiences a higher degree of export instability, whereas developed and industrialized countries experiences lower export instability. These instabilities have a negative influence rather than stimulating economic growth. Macbean and Nguyen (1980) stated that the concentration of LDC exports into a few commodities is a major factor contributing to excessive short term fluctuations in export earnings.

According to Tariq and Najeeb (1995), "a country whose exports consist of only a few commodities is expected to have unstable exports earnings." About the geographical concentration and export earnings instability, Tariq and Najeeb further argued that if a country's exports are going to only a few countries, export earnings might fluctuate a lot.

The LDCs experience high export earnings instability by the virtue of their exports composition, since they export primary commodities and very few manufacturing commodities to the limited countries. Export concentration, in terms of commodities concentration and geographical concentration, and the specialization in primary commodities, such as foodstuffs and a few raw materials, are some prominent factors which generate the export earnings instability of LDCs (Athukorala and Huynh, 1987). Export earnings also

fluctuate from the changing of the international price of commodities, demand of commodities, and supply of commodities. Earnings from a particular product depend on the nature of price elasticity, demand elasticity, and supply elasticity of that product. Macbean (1966) further highlighted that "low price elasticity combined with uncontrolled variability in demand, supply, or both provide an entirely credible explanation for sharp instability in both prices and earnings of primary products".

In general, it is assumed that export earnings from an individual commodity fluctuate more due to the elasticity, demand and supply of the good. The overall export earnings from the bundle of commodities remains more stable, because of earnings from other commodities offset by the fluctuations in export earnings instability from an individual product. Even if each individual product were to generate a high degree of volatility, the sum of all commodities export earnings could still generate stability, because of the offsetting fluctuations in different commodities (Athukorala, & Huynh, 1987).

For the LDCs, it does not imply, since there are very few major commodities, and basically, they export primary commodities, rather than manufacturing and high value goods. Bird finds that among the LDCs, over half of their total export earnings come from three or fewer commodities, which is over 55 percent of their total export earnings (Bird, 1978). This high degree of commodity concentration abrogates a country's possibility of "gaining on the swings what it losses on the roundabouts" (Macbean, 1966).

There is also the analogous contention with export concentration and instability that has emerged about the linkage between geographical concentration and instability in export earnings instability. Like the volatility of an individual product, there might be a highly unstable individual market in a country. The composition of various markets may lessen the overall instability of total export earnings due to the counter-balancing effects. Therefore, more stable the export earnings when there are more exports markets.

In the cross-section analysis Coppock (1977) finds that specialization in primary commodities leads to more instability. With the contradiction of Coppock's findings, some other studies have found that their relationship is insignificant. Empirical studies on the relationship between export earnings instability and commodity concentration found mixed results. Coppock (1962), Massell (1964) and Macbean (1966), in their cross country analysis, found a direct, but insignificant, relationship between export earnings instability and commodity concentration. Other studies conducted by Michaely (1962), Massell (1970), Knudsen and Parnes (1975), Soutar (1977), Sheehey (1977) and Coppock (1977) found a direct and significant relationship between commodity concentration and export earnings instability. Leith (1971), and Stern (1969), in their separate study where they analyzed the time-series data of Ghana and Pakistan, found a decrease in the commodity concentration that reduced the export earnings instability. These studies have all confirmed that there is relationship between commodity concentration and export earnings instability. However, the relationship was not significant in all cases.

In the relationship between the geographical concentration and the export earnings instability, Coppock (1962), Macbean (1966), Massell (1964) and Naya (1973) found a

negative correlation between the geographical concentration and export earnings instability, but it was insignificant. Kingston (1977) and Massell (1970) found a direct relationship; however, it was insignificant, even at the ten percent level. On the contrary, a set of studies conducted in different periods by researchers such as Souter (1977), Stein (1979), Idachaba (1974), Lam (1980), and Coppock (1977) found a significant direct relationship between the geographical concentration and export earnings instability. Stern (1969), Leith (1971), and Lee (1977) conducted a time-series analysis of Pakistan, Ghana, and Malaysia, respectively. They found the relationship between export instability and geographical concentration (concentration on the few export markets) remained inconclusive.

The method of measuring export earnings instability and the nature of explanatory variables plays an important role in the determination of the relationship between export concentration and export earnings instability. Obviously, no one method is free from flaws. Therefore having different types of shortcomings in the statistical test will create a procedural deficiency, rather than any causal relationship.

The cross-country analysis or time-series analysis in export earnings variability depends on the commodities a country exports, the relative share of each commodity in the overall exports basket, the markets to which a country exports and the relative importance of each market. Therefore, the impact of export concentration on export earnings varies country to country and the repercussions of export earnings instability on the domestic economy are also different from one country to another.

However, for the resolution of high export earnings instability that is caused by the export concentration and other factors, one of the important tools to use would be export diversification. Macbean and Nguyen (1987) suggest that diversification in which correlate negatively with the major commodities can contribute to the stabilization of total exports.

Export diversification can lead to higher growth and a positive effect of export diversification on per capita income growth. It is also a potentially nonlinear relationship with developing countries. LDCs are benefiting from diversifying their exports in the opposite way to the most advanced countries that perform better with export specialization (Heiko, 2008). Chenery (1979) and Syrquin (1989) have also emphasized that countries should diversify from primary exports into manufactured exports to achieve sustainable growth. In summary, export concentration may not positively influence export earnings in the developing countries and the compound effect of it may lead to the deterioration of the economic growth of those countries.

Data and Methods

Data Source

For the empirical analysis of this study, and for the purpose of constructing indices, secondary data was used. The data, related to exports, GDP, capital formation and

savings were collected from the various issues of the Economic Survey. Exports to major trading partners and exports of major commodities were taken from the various issues of overseas trade statistics, published by the Trade and Exports Promotion Centre of Nepal. Data for the foreign grants and workers' remittances were taken from the Economic Review and Economic Bulletin of the Central Bank of Nepal. Some data were extracted from the World Development Indicators, Direction of Trade (DOT), International Monetary Fund (IMF), and UNCTAD'S online Comtrade database.

There are a few limitations of the data that should be underlined in this study. First, due to the paucity of consistent data prior to 1974 the sample has to be restricted to the period of 1974-2007. Second, the database of exports and imports as per the Harmonized System (HS) code has not been created at a country level, therefore, only the data of commodities was taken according to the Standard International Trade Classification (SITC) group single digit level.

Tools of Analysis

The final estimation of this study was based on the various indices. These indices were calculated as per the methods of calculation of export concentration and export earnings instability indices. Indices were incorporated into the process of the econometric analysis. The Gini - Hirschman coefficient index and export earnings instability index were employed. For the export earning instability, the exponential trend and moving average methods were used. In some of the studies, the linear trend was employed to find the export earnings instability indices. As a statistical tool, EViews 6 Student Version was used. The ordinary least squares method was taken into consideration for the estimation of the regression coefficients. The Augmented Dickey Fuller (ADF) unit root test was carried out to check whether the variables were stationary or not. Likewise, Banerjee, Dolado and Mestre (BDM) co integration test was conducted to determine the relationship between the variables.

Explanatory variables such as the commodity concentration index, geographical concentration index, openness, and ratio of primary products were included to determine the relationship between export concentration and export earnings instability and the export earnings instability index were regressed on them.

Forty-four commodities and the major thirty five trading partners with Nepal were included in the study to construct the commodity and geographical concentration index, respectively. The weight given by those commodities and countries in total exports was over 90 percent and 80 percent, respectively. The sample period was taken from 1974 to 2007 annually in nominal terms. The following econometric model was formulated to analyze the relationship between export concentration and export earnings instability.

$$I_t = \beta_0 + \beta_1 C_t + \beta_2 G_t + \beta_3 R_{pt} + \beta_4 Open_t + \varepsilon_t \qquad (1)$$

Where:

I_t is the index of export earnings instability in year t calculated by using the formula stated in Equation (1), C_t is the commodity concentration index in year t calculated by using the normalized Hirschman index, G_t is the geographical concentration index in year t obtained by using the Gini-Hirschman coefficient of concentration, R_{pt} is the ratio of primary products to total export earnings in year t, $Open_t$ is the openness index calculated as the ratio of the sum of exports and imports to GDP in year t, and ε_t represents the disturbance terms. Also, the sign of the coefficient of each variable in Equation (1) is expected to be positive.

Different methods can be used to analyze time-series data. Often, the time-series data has the so-called unit root problem. Before carrying out the estimation of the above equation, it is important to test the stationarity of the data series to avoid spurious regressions. For this purpose, the Augmented Dickey-Fuller tests were conducted. In the second stage, if the series have unit roots, Johansen (1988) and Johansen and Juselius (1990) or some other cointegration test can be applied to determine the test of the long run equilibrium relationship among the variables. Being a relatively short data set, however, the Johansen and Juselius cointegration test is not appropriate. Instead, therefore, the small-sample method of the Banerjee, Dolado and Mestre (1998) cointegration test was employed. After conducting these tests, the regression equation was estimated by OLS.

Empirical Results

Unit Root Test

The output of the unit root tests are shown in Table 1. The unit root tests in levels and first differences were performed to determine the unit root of the variables used in this study. The mixed results can be seen since the variable export earnings instability index was significant at the 1% level of confidence rejecting the null of a unit root, but others were not significant in levels. This suggests that the export earnings instability index is, in levels stationary, but other variables are I(1). This variable is not only stationary in levels, but also in first-difference stationary. The test results reported in Table 1 indicate that all the series are stationary in the first difference.

Table: 1 ADF Unit Roots Test Results

Variable	Level		First Difference	
	τ_τ	μ_τ	τ_τ	μ_τ
I_t	-5.020***	-5.055***	-5.611***	-5.525***
C_t	-2.583	-2.301	-4.270***	-4.183***
G_t	-2.820	-2.629	-4.437***	-4.791***
R_{p_t}	-1.655	-0.435	-2.530(2)**	-4.736***
$Open_t$	-1.355	-1.261	-2.256(2)**	-2.214(2)**

Note: ADF test statistics are reported above. The subscripts τ and μ represent the models that allow for an intercept and intercept & trend, respectively. **** and ** illustrates the significance at the 1% and 5% levels. Figures in parentheses indicate the lag length.

Banerjee, Dolado and Mestre (1998) Cointegration Test

After testing for unit roots in each variable, normally, a cointegrating relationship between variables is used to examine time-series analysis. Various methods are used to determine cointegration between variables. The Johansen cointegration test requires that all variables be non-stationary, however, and it is only useful for a large sample size. On the other hand, for the small sample case, the Johansen cointegration test doesn't perform effectively.

This study contained 34 observations, a number that is insufficient to carry out the Johansen cointegration test. Therefore, the Banerjee, Dolando and Mestre (1998) cointegration test was carried out to examine the possibility of cointegration between variables. According to Benerjee, Dolado and Mestre (BDM, 1998), their test works efficiently, even if there is a small sample size. The BDM (1998) cointegration is an error-correction mechanism test and is based on the coefficient of the lagged dependent variable in an Autoregressive Distributed Lag (ADL) method augmented with leads of the regressors. It is a test statistic for cointegration in a single-equation framework. The significance of the lagged dependent variable determines the cointegration between the variables. This test is performed under the null hypothesis of non-cointegration. Variables are cointegrated only when the coefficient of the lagged dependent variable lies between 0 and -2. When it is zero, then the variables are non-cointegrated.

Thus, the coefficient of the lagged dependent variable is estimated by the OLS from the unrestricted dynamic model. The following regression equation was set up for the estimation of lagged dependent variable.

$$\Delta I_t = \alpha + \beta_1 \Delta C_t + \beta_2 \Delta G_t + \beta_3 \Delta R_{pt} + \beta_4 \Delta Open_t + \beta_5 I_{t-1} + \beta_6 C_{t-1} + \beta_7 G_{t-1} + \beta_8 R_{P,t-1} + \beta_9 Open_t + \beta_{10} C_{t+1} + \beta_{11} G_{t+1} + \beta_{12} R_{p,t+1} + \beta_{13} Open_{t+1} + \varepsilon_t \qquad (2)$$

Where: Δ represents the first difference of the variable, t-1 represents the lagged variables and t+1 represents the lead variable, respectively. A necessary condition for cointegration is that $-2 < \beta_5 \leq 0$.

The estimated coefficients of equation (2) are presented in Table 2. Equation (1) constitutes up to four (k=4) regressors and it revealed that the coefficient of the lagged dependent variable was -0.56. It lies between -2 and 0. However, none of the t-ratios are greater in absolute terms than the BDM test statistic table value of -3.15 at the 5 percent level or even at the 10 percent level. That means that the null hypothesis of no cointegration cannot be rejected. Thus, there is no cointegrating relationship between export earnings instability and the explanatory variables.

Table: 2 BDM (1996) Cointegration Test Results, 1974-2007

Variables	(1) K=4	(2) K=3	(3) K=2	(4) K=1
C	-201.12 (-3.19)	-69.37 (-1.91)	-56.33 (-1.69)	11.06 (1.87)
ΔC_t	18.91 (0.16)	129.45 (1.40)	164.26 (1.94)	203.65 (2.42)
ΔG_t	66.23 (0.91)	28.56 (0.39)	42.95 (0.62)	
ΔR_{pt}	-1.26 (-1.33)			
$\Delta Open_t$	194.72 (1.11)	239.16 (1.36)		
I_{t-1}	-0.56 (-2.89)	-0.56 (-2.68)	-0.56 (-2.97)	-0.57 (-3.32)
C_{t-1}	-58.36 (-0.56)	34.12 (0.52)	65.90 (1.18)	89.89 (1.60)
G_{t-1}	42.05 (0.73)	26.56 (0.48)	25.32 (0.49)	
R_{Pt-1}	0.21 (0.30)			
$Open_{t-1}$	270.22 (1.91)	162.13 (1.18)		
C_{t+1}	179.29 (1.55)	28.60 (0.41)	-9.09 (-0.15)	-73.75 (-1.34)
G_{t+1}	100.00 (1.72)	88.53 (1.45)	77.71 (1.33)	
R_{Pt+1}	0.63 (0.72)			
$Open_{t+1}$	-7.18 (0.04)	-143.30 (-0.91) ·		

Note: t-ratios are shown in parentheses. The one sided critical value of the t-ratio, with the number of regressors= 4 and n= 34 lies in between -4.18 to -4.05. K represents the number of regressors.

Estimated Regression Coefficients by Method of OLS

After being unable to reject the null of no cointegration, we proceeded to estimate the relationship between the dependent and explanatory variables using OLS. The estimated coefficient of each independent variable under the econometric model in Equation (10) using OLS is listed in Table 3. The number of equations after dropping commodity concentration index and geographical concentration index in a model. There may be other variables which might have positive or negative repercussions on export earnings instability. Therefore, it would help to figure out the appropriate association between export earnings instability and export concentration in terms of commodity concentration and geographical concentration.

Equation (1) includes all explanatory variables defined in the econometric model. The coefficient of both commodity concentration and geographical concentration is highly significant at the 1 percent level, with the expected positive sign. This reveals that there is a strong association between those explanatory variables and the variable of interest on the left hand side of the model. The coefficient of commodity concentration is slightly lower than the coefficient of geographical concentration. However, their coefficients are robust enough to explain its linkage with export earnings instability. This illustrates that Nepal's export earnings instability is highly influenced by the commodity concentration, as well as the geographical concentration. The rest of the explanatory variables are insignificant, even at the 20 percent level.

The coefficient of openness is higher than the coefficient of the ratio of the primary product. However, they do have the expected positive sign. The low coefficient of the ratio of the primary product directs that its association with export earnings instability is quite insignificant. On the other hand, the coefficient of openness is also not that high, remaining under 50 percent. What it illustrates is that there is less effect of these two variables on export earnings instability in Nepal. This result is in the line of assumptions that a more open country faces more export instability and the high ratio of primary product to the total export creates a high fluctuation in export earnings.

The value of R-squared and adjusted R-squared is 0.34 and 0.25, respectively, in Equation (1). This seems to be quite low, since these values remain high in the time-series data, rather than the cross-sectional data. However, it is not only the indicator which will explain the model perfectly, there would also be some other uncontrolled variables not currently included in the model. The value of the adjusted R-squared is significant at the 5 percent level using F-test. The significance of the adjusted R-squared illustrates that export earnings instability in Nepal is explained well by the explanatory variables C_t, G_t, R_{pt}, and $Open_t$.

The D-W statistic suggests that there might be autocorrelation. Although many of the series are likely to be I(1), a regular OLS was conducted. A significant F-value and insignificant t-value on some variables illustrates that there is some multicollinearity in this hypothesized model. But by using the Breusch – Godfrey LM test for the autocorrelation of the residual of the model, it illustrates that there is no serial correlation

of the residuals of the various time periods, where the null hypothesis of no serial correlation is tested and is found not to be rejected. It means that the model has not suffered from the problem of serial correlation. In addition, a RESET test (Ramsey, 1969) was also conducted to ensure the absence of specification error. The value of the estimated RESET F-test was statistically insignificant at the 1 percent level, which suggests that this estimation did not suffer from any misspecification problem.

Table: 3 Estimation Results with Dependent Variable:
Export Earnings Instability, 1974-2007

Variables	(1)	(2)	(3)	(4)
Constant	-56.694	-42.101	-41.176	-55.316
	(-1.79)	(-2.04)	(-2.00)	-2.38
C_t	70.529***	72.772***	66.642***	69.989***
	(3.11)	(3.51)	(3.08)	(3.38)
G_t	93.015***	90.05***	99.165***	93.851***
	(2.79)	(2.97)	(3.14)	(3.11)
R_{p_t}	0.015		-0.120	
	(0.065)		(-1.00)	
$Open_t$	44.878			40.982
	(0.65)			(1.20)
R^2	0.344	0.312	0.334	0.344
$\overline{R}^2$	0.253	0.268	0.268	0.278
F-ratio	3.808	7.04	5.033	5.25
	(0.01)	(0.003)	(0.006)	(0.004)
D-W stat	1.277	1.246	1.27	1.27
RESET F	0.51	0.035	0.34	0.47
Sample Size	34	34	34	34

Note: t-ratios are shown in parentheses and *, ** and *** denote significance at the 10%, 5%, and 1% level, respectively.

In the next stage, Equation (2) was formulated by dropping two explanatory variables, R_{pt}, and $Open_t$, to better understand the core relationship between export earnings instability, the commodity concentration and the geographical concentration. The outcomes reveal evidence that there is a strong association between the dependent variables and the explanatory variables, since the coefficient of each explanatory variable is highly significant at the 1% level. The value of the coefficient of the commodity concentration crossed the value of the coefficient of geographical concentration, even though they had the expected positive sign. The adjusted R-squared value increased slightly from 0.25 to 0.264. The exclusion of R_{pt} and $Open_t$ did not lessen the explanation capacity of the interest variables in the model.

In Equation (3), the dropped variable in Equation (2) was included to determine its impact without the fourth variable, openness on export earnings instability. Again, the commodity concentration and geographical concentration was highly significant at the 1% level, with expected positive sign, but the value of the coefficient varied significantly.

The coefficient of the commodity concentration decreased to 66 from 72, whereas the coefficient of geographical concentration increased by almost 100. The included variable R_{pt} was insignificant with the opposite sign. It reveals that the high ratio of the primary product decreases instability in export earnings. This finding supports the assumption that the higher the contribution of food to the total exports, the lower the instability in export earnings. To the extent, it proves Nepal's export of primary product constitutes a lower quantity of raw materials than food products. The adjusted R-squared value didn't change, which suggests that the model doesn't affect the explanatory power of other variables not matter whether the variable R_{pt} is included or not.

To check the importance of the explanatory variables in the model, again, the included variable R_{pt} in Equation (3) was dropped and another variable, $Open_t$, was incorporated in Equation (4). The estimated coefficients of the commodity concentration and geographical concentration were significant at the 1% level with the expected sign. The little change was found in the value of the coefficient of the variables compared with the coefficients reported in other equations. The coefficient of the variable included in Equation (4) decreased, compared with its original equation. It was highly insignificant, but had a high coefficient value, illustrating that there is an association between export earnings instability and openness. Since, in Nepal's context, being the most open economy among in the SAARC countries, openness has positive repercussions on the export earnings instability. The adjusted R-squared value remained higher than in other equations, as well as the original equation. The insignificant RESET F-test revealed that there is still no misspecification error, even if the model was formulated by including the explanatory variables C_t, G_t and $Open_t$.

The most significant variable among all explanatory variables was C_t, on the basis of the t-values in all equations in Table 2. This suggests that commodity concentration creates a higher degree of export earnings instability for Nepal's exports. Those who have been arguing that Nepal's export are highly concentrated in commodities such as Nepal has only been exporting a few commodities, like readymade garments, woolen carpets, handicrafts and some manufacturing goods, empirical findings of this study buttress this thought. On the contrary, this study cannot conclude that Nepal's exports are not concentrated in geographical markets. The same group of people has been claiming that Nepal's export market is limited. The main market of its product is some of the countries of the EU, the USA, and some countries in Asia and South Asia.

In both terms, the findings of this empirical study revealed that there is a strong association between export concentration and export earnings instability in Nepal. There would be other causes, such as tax systems, customs procedures, easy access for transport and transit via land to other countries, a specific export policy and its implications, which might influence instability in export earnings.[2] Some of them cannot be quantified, and therefore, it is difficult to measure its influence empirically. Those which can be

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2   Study of other causes of export earnings instability is beyond of this study.

quantified may be paucity of the continuous data series that cannot be incorporated in a model. This finding, to some extent, is contradicted with the other's findings regarding cross country analysis. However, it also supports the export diversification strategy of the Nepalese government to reduce its export earnings instability through commodity and the findings of new markets.

Macbean (1964) to Athukorala (1986) suggested that export diversification will be one way to stabilize export earnings. According to Ghosh and Ostry (1994), "diversification makes countries less vulnerable to adverse terms of trade shocks by stabilizing export revenues, makes it simpler to channel positive terms of trade shocks into growth, and generates learning opportunities that lead to new forms of comparative advantage". This is true because the foreign demand and supply of primary products are uncontrolled causes for the export earnings instability and a single country cannot deal with it alone.

Therefore, Nepal should adopt export diversification strategies to stabilize export earnings instability, rather than just making policy for export promotion. There are various ways and methods for export diversification, some of them are moving or shifting into high value added activities in existing export sectors, being a member of bilateral and multilateral organizations to extend its market and investing in the service sector. For the sustainable economic development of Nepal, the export sector should flourish and its reliance on foreign grants should lessen gradually.

Conclusions and Policy Recommendations

Conclusions

Export concentration would not only create export earnings instability, but may also hamper the economic development of a country. Therefore, various empirical evidence suggest that both export concentration and export earnings instability should be taken into consideration by the policy makers of the developing worlds, since export earnings instability has been occurring more frequently in those countries than in developed countries. Some studies found that the relationship between export concentration and export earnings instability was inconclusive (Stern, 1969; Lee, 1977). Most the empirical studies have established a strong relationship between commodity concentration and export earnings instability. In the same line, they found a close relationship between geographical concentration and export earnings instability.

Nepal is a tiny country and its export sector has not flourished. The trade deficit of Nepal has been widening year to year and the foreign exchange reserve is covered by foreign grants and workers' remittances. Export earnings have fluctuated heavily. Traditionally, Nepal has been exporting very few commodities to a limited number of countries. Even after adopting a liberalization policy and becoming a member of the world trade organization, her export market and exportable products have not changed or expanded.

This paper was an effort to determine whether Nepal's exports were concentrated in terms of commodity and geographical markets or not and its relationship with the export earnings instability of Nepal. Pant and Panta (2009), and the South Asia Watch on Trade Economics and Environment (SAWTEE, 2008) stated that Nepal's exports are highly concentrated in the case of commodities and markets. Therefore, this effort has been conducted to determine this issue empirically. In this line, this paper has presented empirical evidence that export earnings instability is associated with export concentration in Nepal.

The export earnings instability also fluctuates highly around a trend. It means that Nepal has been suffering from high export earnings instability. The implication of this could not have been realized, because it has been stabilized by foreign loans, grants and workers' remittances. If something happens with loans, grants and workers' remittance, by any means, fluctuations in export earnings are likely to inflict hardships on the economy. After analyzing export earnings instability by commodity, this study found readymade garments, carpets (hand knotted woolens), dried ginger, and jute goods to be relatively more stable goods than others. In addition the study found that the USA, India, Germany, and Switzerland were more stable markets than the other markets. However, export earnings from this market highly fluctuated in the sub-sample periods.

Regression analysis revealed that commodity concentration and geographical concentration were significantly and positively associated with export earnings instability, whereas the ratio of primary products and openness had positive coefficients, but were highly insignificant. The results suggest that export earnings instability is influenced by export concentration, rather than other explanatory variables.

Policy Recommendations

Export concentration generates export earnings instability and fluctuations in export earnings instability adversely affect macro and micro variables. In addition, it may retard economic growth. Therefore, action should be taken to handle the export concentration problem to lessen export earnings instability.

As recommended by many studies, an effective export diversification policy should be adopted. Nepal has adopted an export promotion policy that has not been effective. Also this policy not yet resulted in any significant increases in any kind of diversification. Therefore, an effective export diversification strategy should be taken into consideration, such as sufficient R & D expenses for the identification of products that have a comparative advantage, clustering of industries that creates knowledge spillover effects, use of modern technology and easy access of financial supports for SMEs.

Legal and administration reforms related to exports and imports procedures should be created for sustainable export growth. The government should focus its concentration to enhance the international competitiveness of the exportable products through improving labor productivity and maintaining product quality. The government should also take

initiation together with the private sectors to locate new markets for traditional products, as well as new products.

The trade and industrial policy should be reformed in a real sense and a friendly investment climate should be created for the expansion of the exports sector. Relationships with trading partners should be improved through bilateral negotiations frequently. For example, after the collapse of the MFA system for readymade garments, its exports to the USA decreased. Therefore, losses from the USA market can only be recovered after locating new markets. Thus, a bilateral dialogue should have begun with European Countries for the market of readymade garments.

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